



Student: **Michael Higley-Vance**

THIS FORM MUST BE COMPLETELY FILLED IN

Follow these procedures: If requested by your instructor, please include an assignment cover sheet. This will become the first page of your assignment. In addition, your assignment header should include your last name, first initial, course code, dash, and assignment number. This should be left justified, with the page number right justified. For example:

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Save a copy of your assignments: You may need to re-submit an assignment at your instructor's request. Make sure you save your files in accessible location.

Academic integrity: All work submitted in each course must be your own original work. This includes all assignments, exams, term papers, and other projects required by your instructor. Knowingly submitting another person's work as your own, without properly citing the source of the work, is considered plagiarism. This will result in an unsatisfactory grade for the work submitted or for the entire course. It may also result in academic dismissal from the University.

EDU7003-8

Dr. Rebecca Watts

Statistics

**Activity #8: Fictitious Statistical Study –
Signature Assignment**

Numerical Points	Letter Grade	Descriptor	Explanation
100 - 94	A	Excellent	Completes all required parts of the assignment, demonstrates deep understanding of materials, uses very clear and effective appropriate to scholarly writing, and has very few or no mechanics, and APA formatting. Very good communication of the procedures, methods and results.
93-90	A-		
89-87	B+	Good	Completes all or most required parts of the assignment, demonstrates good understanding of readings, uses mostly clear and effective expression appropriate to scholarly writing, and has few errors in grammar and APA formatting.
86-83	B		
82-80	B-	Fair	Completes most required parts of the assignment, demonstrates some understanding of readings, and writing is somewhat clear, effective, and scholarly, and has some errors in grammar, mechanics, and APA formatting.
79-77	C+		
76-73	C	Poor	Completes some required parts of the assignment, demonstrates some understanding of readings, and writing is difficult to understand and unscholarly and has several errors in grammar, mechanics, and APA formatting.
72-0	F	Unacceptable	Completes few required parts of the assignment, demonstrates little understanding of readings, and writing is difficult to understand and unscholarly and has many errors in grammar, mechanics, and APA formatting.

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Comment [1]: Michael, you completed all aspects of the assignment.

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Comment [2]: I made some comments in your paper about the chi-square results. See my comments.**Comments:****Faculty Use Only**

Michael, you did very well on the assignment. Your thorough analyses of the descriptive statistics on all variables was especially good. It was not necessary that you conducted the descriptive statistics on all of the variables. So, your effort here is greatly appreciated. In some places of your paper, it seems that you are referring to statistics from a publication. This is somewhat confusing. When you conduct a study, you select a sample and you collect data on that sample. You report that data in one of the tables located in the appendix. The other table seems to be from a publication and is not related to your data collection or your analysis. So, you might present that table in a literature review. But you would not include that table with your data

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collection procedures or analysis. Stick to your data. I made some comments about the chi-square results. It seems that you obtained one value for chi-square, but you interpreted another value that was included in the textbox. I did not follow your logic in including that textbox. Also remember this: Correlation does not imply causation. You cannot infer “impact” or “affect” or “effect” when your research design and analysis is based on correlation or relationships. Let me know if you have questions. 92%

<Faculty Name> <Grade Earned> <Writing Score> <Date Graded>

Fictitious Statistical Study:

A Look at High School Graduation Rates and Parental Sexual Orientation

Michael Higley-Vance

Northcentral University

A Look at High School Graduation Rates and Parental Sexual Orientation

Introduction

Improving the United States (U.S.) high school graduation rate has been our nation's goal for years since the 1950's. In the mid 1990's the U.S. Department of Education adopted six national education goals, which included increasing the high school graduation rate and eliminating the gap between minority and non-minority graduating sub-groups. However, these goals were voluntary and did little to improve the high school graduation rate. In 2001 the federal No Child Left Behind Act (NCLB) required that all states receiving Title I funds create an accountability system for all school districts in the state. This initiative helped hold states and school districts responsible for student learning but without being held accountable for showing evidence of learning this left many students behind partly because schools felt the pressure to promote students regardless of student performance. A decade later the federal government began working on a new plan to improve the state of education and will begin implementing a Race to the Top educational initiative slotted to begin in 2014. States that adopt the Race to the Top educational plan will be held more accountable to improving student achievement, increasing graduation rates, and lessening the gap between sub-groups among others.

The Purpose

In May of 2011, the United States (U.S.) Department of Education reported that among U.S. public high school students in the class of 2007–08, the average graduation rate was only 74.7 (Aud et al., 2011). With an increasing demand from the 21st-century workforce, there is little question that high school students should graduate college and career ready; this includes students raised by same-sex parents. In September of 2011, the U.S. Department of Commerce reported that there were a total of 593,324 same-sex households in the United States and of those households 209,691 reported having one or more children living in the home. Researchers have identified a limited number of connections associated with parental sexual orientation and a child's academic performance. Unfortunately, very little research has focused on the effects a parent's sexual orientation has on them successfully graduating from high school, college and career ready. The purpose of this paper seeks to find a significant impact between a parent's marital or sexual orientation and the graduation rates of high school students living in those households.

With several government initiated education plans created over the past few decades initiated to address and improve education across the U.S. and with the federal government's new Race to the Top initiatives in mind, this paper serves to address a possible connection between students graduating high school and a parent's marital or sexual status. Households with same-sex parents have begun to experience greater public notoriety due to the increase in media and political attention (Power et al., 2010). As a result of this exposure there has been an increase in academic research seeking to understand the social and psychological impact same-sex parents have on their children (Wainright, Russell, & Patterson, 2004; Allen, 2013). Little research, however, has been conducted in the United States on the development of adolescents raised in homes with same-sex parents.

Allen (2013) has suggested that a parent's sexual orientation might have a wavering impact on a child's development during adolescence. Others have argued that the characteristics of family relationships and interactions are likely to be more important influences than a parent's sexual orientation (Wainright, Russell, & Patterson, 2004). Thus, it is not surprising that a growing body of empirical research exists in the social and psychological outcomes among children who are raised in households where same-sex parents have a primary parenting role. Results of these studies suggest that a child's development is similar regardless of parental sexual orientation (Wainright, Russell, & Patterson, 2004; Allen, 2013). This conclusion, that there is no difference in a child's academic performance based on family structure, will hopefully play a role in determining that graduation rates are not affected by a parent's sexual orientation.

Research question. Does a parent's sexual orientation have a significant relationship with a student graduating from high school?

Research null hypothesis. I predict that a parent's sexual orientation has no significant relationship and is independent of whether or not a student graduates high school.

Research alternative hypothesis. I predict that a parent's sexual orientation is not independent of whether or not a student graduates high school and therefore does have a significant relationship.

Description of Variables

The independent variable in this study is the number of graduating high school seniors living in households where there are straight, gay, or lesbian identifying parents. The dependent nominal variables taken into consideration and used in this study was a parent's sexual orientation and gender of the student. Gender can be taken into more consideration for future

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Comment [3]: When you are looking for relationship among variables, you cannot conclude that one variable impacts another or one variable causes another. You cannot establish causation when you have correlation.

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study. The student's GPA has also been taken into consideration to determine the mean, median, and mode statistical data needed to help perform the anticipated Chi-Squared test.

Variable 1. The first nominal variable identified in this study was the nominal variable of the student's gender. Gender was denoted as 1 for male and 2 for female. The gender of all high school seniors, from the population sample, was taken into consideration to help identify if a relationship exists between the sex of a child and the independent variable. Out of sixty randomly selected students, thirty-three were male and twenty-seven were female.

Variable 2. The second nominal variable identified in this study was the parent's sexual orientation. A parent's sexual orientation was denoted as 0 for opposite sex or straight parents and 1 for same-sex or gay/lesbian parents. This information was gathered by looking at the marital status reported on the U.S. census report. Out of the sixty randomly selected students, thirty came from opposite sex (male/female) family households and the other thirty came from self-identified same-sex (male/male or female/female) family households.

Variable 3. The third variable identified was whether or not the randomly selected students graduated from high school. The words yes and no were used to identify whether a student graduated; yes the student graduated or no the student did not graduate from high school. The word yes was denoted as a 1 and the word no denoted as a 2. Thus, this variable is also a nominal variable.

Variable 4. The fourth variable used in this study was an interval variable using the randomly selected students' high school grade point averages (GPA).

Population

This paper attempts to address the hypothesis by using the 2013 National Center for Education: Back to School statistics and the 2011 U.S. Department of Commerce report on the

2010 U.S. census to study high school graduation probabilities of children who lived with both opposite sex and same sex families during their senior year of high school. It is important to note that the U.S. census data on same-sex households has several weaknesses compared to the other data sets it provides and will be explained in more detail below.

Data Analysis

Sixty high school students from across the United States of America were randomly selected for this study. The projected number of high school seniors came from the 2013 National Center for Education Statistics and the reported number of households with straight and gay/lesbian reporting couples was found in the 2010 U.S. Census Report. Together, these two data points helped determine the approximate number of high school students from each of their respective reporting household. It's important to note however, that the largest caution found with the data is with the validity of the census report. The census uses information, reported by households from across the country, a country divided by the legalization of same-sex relationships. Thirty-three states in the country still ban same-sex marriages and many of those still do not protect against discrimination on the basis of sexual orientation. This poses a possible problem with the validity of the data reported in the U.S. census because not all same-sex households across the country may be reporting correctly out of fear of possible discrimination. Thirty of those randomly selected students came from a group of 3,000,000 straight identifying family households. The other thirty randomly selected students came from a group of 12,582 gay/lesbian identifying family households. The males and females of each group were identified for future statistical analysis. The overall population data collected for each reporting group is

shown in Table 1.0 in Appendix A. Okay, this is a good explanation. But, in reality, you would collect the data from individual students and not from a report.

Descriptive Analyses

The data points for the test group are given in Appendix A, Tables 1.0 and 1.2. Table 1.0 lists the projected number of school-aged children for 2013 in the U.S. along with the break down of projected high school seniors. Table 1.0 break down is divided between males and females who live in households with straight or gay/lesbian identifying parents. Table 1.2 lists the randomly selected students by name and indicates their gender, graduation status, GPA, and parent's sexual orientation. The table lists the total number of expected high school students and then isolates that data into opposite sex and same-sex households reporting to having one or more high school students in the home during the time of the data collection. The table also depicts the number of males and females from each population set and the total number of seniors who are projected not to graduate either because they dropout of school or because of other factors such as death.

The statistical data used in the next Appendix is defined here starting with the mean, which is the arithmetic average of a data set, computed by adding up a collection of numbers and dividing by their count. The median is the middle data value of a set of values when the data have been arranged into order. If there is an even number of data, then there is no single middle value; the median is then usually defined to be the mean of the two middle values. In statistics, the mode is the most frequently occurring value in a data set. The mode is not necessarily unique, since the same maximum frequency may be attained at different values. The range of a set of numbers is the difference between the greatest value and the lowest value. It describes

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Comment [4]: It seems that you are confusing the sample data and the population data.

how spread out the data is. The standard deviation is a quantity calculated to indicate the extent of deviation for a group. The variance is the average of the squared differences from the mean.

The descriptive GPA statistics for the test group are depicted in Appendix B, Tables 2.0-2.8, and describe here showing the mean, median, mode, and in a few of the tables indicating the range, standard deviation, and variance. Table 2.0 gives the GPA statistics of all sixty randomly selected boys and girls, showing a standard deviation of .7947, a variance of .6316, and a mean of 2.75 GPA. Table 2.1 lists a mean of 2.589 GPA, a median and mode of 2.8 GPA, and a range of 3.11 for thirty-three boys. Table 2.2 lists a mean of 2.946 GPA, a median of 3.12 GPA, a mode of 2.9 GPA, and a range of 2.63 for twenty-seven girls. Table 2.3 lists the GPA statistics for thirty randomly selected students living in straight identifying parental households. Table 2.4 represents the fifteen males living in straight identifying parental households showing a standard deviation of .8277, a variance of .6852, and a 2.26 GPA mean. Table 2.5 represents the fifteen females living in straight identifying parental households showing a standard deviation of .8131, a variance of .6611, and a 2.84 GPA mean. Table 2.6 lists the GPA statistics for thirty randomly selected students living in gay/lesbian identifying parental households. Table 2.7 represents the eighteen males living in gay/lesbian identifying parental households showing a standard deviation of .7148, a variance of .5109, and a 2.86 GPA mean. Table 2.8 represents the twelve females living in gay/lesbian identifying parental households showing a standard deviation of .6400, a variance of .4096, and a 3.07 GPA mean. [This is a very thorough explanation of the descriptive analyses.](#)

The results of the Chi-Squared test for the test group are shown in Appendix C. Table 4.1, a two-way Crosstab, shows a break down of high school students who graduated and did not graduate high school and who lived with straight identifying parents and gay/lesbian identifying

parents. [Good work on this crosstabulation table.](#) In the population of students living with straight identifying parents there were twenty-three students who graduated high school and seven students who did not graduate high school for a total of thirty students. In the population of students living with gay/lesbian identifying parents there were twenty-seven students who graduated high school and three students who did not graduate high school for a total of thirty students.

Data Analysis

This portion of the paper discusses the statistical results related to the null hypothesis and attempts to show that a parent's sexual orientation has no significant [relationship to](#) whether or not a student graduates high school. The data from the tables and figures described above will be used here.

Hypothesis. The null hypothesis is that there is no relationship between a parent's sexual orientation and whether or not a student graduates high school. This study was conducted to show that there is no significant [relationship between](#) students graduating high school based on the parent's sexual orientation. The method used to test the null-hypothesis is the Chi-Square test. The Chi-Square test is used to determine an association between two nominal variables. The two nominal variables used in this test are parental sexual orientation and the [whether the student graduated from high school](#). [The GPA score that indicated a student graduated was set at 2.49 and a graduating GPA was set at <2.5.](#) Parental sexual orientation is categorized as straight identifying or gay/lesbian identifying. Therefore, students will fall into one of four sections, which are straight identifying parents resulting in a graduation, straight identifying parents resulting in no graduation, gay/lesbian identifying parents resulting in a graduation, or finally gay/lesbian identifying parents resulting in no graduation. [good](#)

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Comment [5]: I don't understand this procedure.

The assumption of the Chi-Square test is that the selected population sample used must be random. The data used in this study fit this assumption because all sixty students were in fact chosen at random. The second assumption of the Chi-Square test is that there must be at least 20 reporting subjects and this study used sixty, thirty randomly selected students from straight identifying households and another thirty randomly selected students from gay/lesbian households.

Interpretation of results. Looking at Table 4.0, Appendix C, 23 out of 30 students living in a straight identifying parental household graduated high school. Seven out of the 30 students living in a straight identifying parental household did not graduate high school. Looking at the students living in a gay/lesbian identifying household, 27 out of 30 graduated from high school and 3 did not graduate from high school. Out of the 60 students that were randomly selected, 50 graduated high school and 10 did not graduate.

Table 4.2, Appendix C, shows the calculation of Chi-Square statistic. The Chi-Square test statistic is 1.920. The critical value with degrees of freedom as one and significant level 0.05 is -0.9701. Since the test statistic is greater than the critical value at the 0.05 level of significance ($1.920 > -0.9701$), the null hypothesis is rejected and therefore the alternative hypothesis must be accepted as true. This is not true. See my comments in the chi-square table.

Discussion of Results

The main research question for the study was “does a parents’ sexual orientation have a significant impact on whether or not a student graduates from high school?” The results of the Chi-Squared test showed that there was a significant impact and relationship between the two nominal variables. That is, a parents’ sexual orientation does have an affect on whether or not a student, living in that home, graduates from high school. In the interest of helping school

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Comment [6]: Just because there is a relationship does not mean that one variable has an effect on the other.

districts, families, and students be more successful at improving high school graduation rates, more research in this specific area of study should focus on the relationships between other variables such as gender, number of parents in the home, sexual orientation, marital status, relationship status, and so on in order to determine a negative or positive correlation between the variables. This information could prove to help many families and school districts to isolate problematic variables that have a negative impact on high school students. Once this phenomenon is understood the potential for increased graduation rates is exponential.

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Table 1.0 Data Population = I don't understand the relevance of this data.

Table 1.1 Data Population Breakdown --This is the data from your sample.

Student Name	Gender (M=1)	Graduated (YES or NO)	GPA	Parent's Sexual Orientation (OS=0 & SS=1)	Student Name	Gender (F=2)	Graduated (YES or NO)	GPA	Parent's Sexual Orientation (OS=0 & SS=1)
33					27				
Sam	1	YES	3.4	1	Mandy	2	NO	1.3	1
John	1	YES	1.5	0	Pam	2	YES	3.7	0
Phillip	1	YES	2.47	0	Sammie	2	YES	3.16	1
Michael	1	YES	3.8	1	Bobbie	2	YES	3.1	1
Eric	1	YES	2.61	0	Marie	2	NO	1.44	0
Toby	1	YES	3.5	1	Barbara	2	YES	3.12	1
Jason	1	NO	1.2	0	Tabitha	2	YES	3.28	0
Shawn	1	YES	2.9	1	Jill	2	YES	3.49	0
Bill	1	YES	3.2	1	Ashley	2	YES	3.2	1
Joe	1	YES	2.6	0	Maggie	2	YES	3.9	1
Isaac	1	YES	3.12	1	Tina	2	YES	2.9	0
Sammy	1	YES	2.8	0	Becky	2	YES	3.5	0
Tim	1	NO	1.4	0	Ariel	2	YES	3.22	1
Lane	1	YES	2.8	1	Grace	2	YES	2.9	0
Johnny	1	YES	2.9	1	Mimi	2	YES	2.84	0
Abe	1	YES	3	0	Tiffany	2	YES	3.19	1
Theodore	1	YES	2.5	1	Linda	2	YES	3.46	0
George	1	YES	2.8	1	Gina	2	YES	2.8	0
Bob	1	YES	2.2	0	Rebecca	2	YES	3.1	1
Tom	1	YES	3.1	1	Heather	2	YES	2.9	0
Jackson	1	NO	1.23	1	Lisa	2	YES	3.26	1
Peter	1	NO	1.32	1	Gale	2	YES	3.72	0
Paul	1	YES	3.21	0	Mary	2	YES	2.64	1
Mikal	1	YES	2.98	1	Melinda	2	YES	3.7	1
Emmmanuel	1	YES	3.33	0	Kristy	2	YES	2.98	0
Todd	1	NO	1.12	0	Cassandra	2	NO	1.48	0
Tiger	1	YES	4	1	Tammy	2	NO	1.27	0
Elliot	1	YES	3.14	0					
Ben	1	NO	0.89	0					
Dan	1	YES	2.28	1					
Scott	1	YES	2.71	1					
Phil	1	YES	3	1					

Appendix B

Table 2.0 Overall Male/Female GPA Statistics

Results:	
Sample Standard Deviation, s :	0.79476783022138
Sample Standard Variance, s^2	0.6316559039548
Total Numbers, N	60
Sum:	164.99
Mean (Average):	2.74983333333333
Population Standard Deviation, σ	0.78811693647298
Population Standard Variance, σ^2	0.62112830555556

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Comment [7]: Okay Michael, but when you use a sample for your research study, you cannot calculate a population standard deviation or variance.

Table 2.1 Overall Male GPA Mean, Medium, & Mode Results

Total numbers:	33
Sum of numbers:	85.44
Mean (Average):	2.58909090909
Median:	2.8
Mode:	2.8
Range:	3.11

Table 2.2 Overall Female GPA Mean, Medium, & Mode Results

Total numbers:	27
Sum of numbers:	79.55
Mean (Average):	2.9462962963
Median:	3.12
Mode:	2.9
Range:	2.63

Table 2.3 GPA's of Students Living in Straight Identifying Parental Households

Results:

Sample Standard Deviation, s :	0.85917522599614
Sample Standard Variance, s^2	0.73818206896552
Total Numbers, N	30
Sum:	76.56
Mean (Average):	2.552
Population Standard Deviation, σ	0.84473427774656
Population Standard Variance, σ^2	0.713576

Table 2.4 GPA of Males Living in Straight Identifying Parental Households

Results:

Sample Standard Deviation, s :	0.82777671247401
Sample Standard Variance, s^2	0.68521428571429
Total Numbers, N	15
Sum:	33.9
Mean (Average):	2.26
Population Standard Deviation, σ	0.79970828014554
Population Standard Variance, σ^2	0.63953333333333

Table 2.5 GPA of Females Living in Straight Identifying Parental Households

Results:

Sample Standard Deviation, s :	0.81312272839257
Sample Standard Variance, s^2	0.66116857142857
Total Numbers, N	15
Sum:	42.66
Mean (Average):	2.844
Population Standard Deviation, σ	0.78555118653508
Population Standard Variance, σ^2	0.61709066666667

Table 2.6 GPA's of Students Living in Gay/Lesbian Identifying Parental Households

Results:

Sample Standard Deviation, s :	0.68259486309702
Sample Standard Variance, s^2	0.46593574712644
Total Numbers, N	30
Sum:	88.43
Mean (Average):	2.9476666666667
Population Standard Deviation, σ	0.67112186341644
Population Standard Variance, σ^2	0.45040455555556

Table 2.7 GPA of Males Living in Gay/Lesbian Identifying Parental Households

Results:

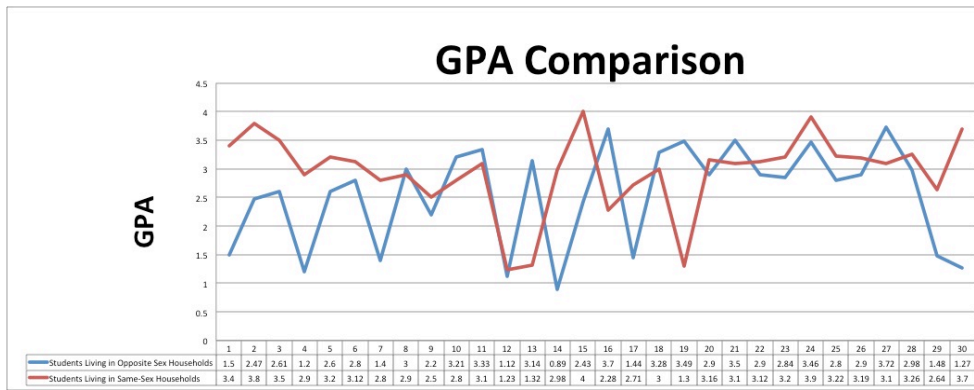
Sample Standard Deviation, s :	0.7148179529659
Sample Standard Variance, s^2	0.51096470588235
Total Numbers, N	18
Sum:	51.54
Mean (Average):	2.8633333333333
Population Standard Deviation, σ	0.69467818288599
Population Standard Variance, σ^2	0.48257777777778

Table 2.8 GPA of Females Living in Gay/Lesbian Identifying Parental Households

Results:

Sample Standard Deviation, s :	0.64000651038355
Sample Standard Variance, s^2	0.40960833333333
Total Numbers, N	12
Sum:	36.89
Mean (Average):	3.0741666666667
Population Standard Deviation, σ	0.61275958218175
Population Standard Variance, σ^2	0.37547430555556

Figure 2.0 GPA Graph Comparison between Straight and Gay/Lesbian Identifying Parental Households



Very good work on your descriptive analyses! You actually did more analyses than what was required. Your effort and work here is greatly appreciated.

Appendix C

Table 4.0

Crosstab

			Graduated		Total
			Did Graduate HS	Did NOT Graduate HS	
Gender	Male	Count	27 _a	6 _a	33
		% within Gender	81.8%	18.2%	100.0%

	% within Graduated	54.0%	60.0%	55.0%
	% of Total	45.0%	10.0%	55.0%
Female	Count	23 _a	4 _a	27
	% within Gender	85.2%	14.8%	100.0%
	% within Graduated	46.0%	40.0%	45.0%
	% of Total	38.3%	6.7%	45.0%
Total	Count	50	10	60
	% within Gender	83.3%	16.7%	100.0%
	% within Graduated	100.0%	100.0%	100.0%
	% of Total	83.3%	16.7%	100.0%

Table 4.1

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.121 ^a	1	.728		
Continuity Correction ^b	.000	1	1.000		
Likelihood Ratio	.122	1	.727		
Fisher's Exact Test				1.000	.503
Linear-by-Linear Association	.119	1	.730	Chi-Square = 1.920 degrees of freedom = 1 probability = 0.166	
N of Valid Cases	60				
				Chi-Square critical value = -0.9701	

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Comment [8]: This is the chi-square value. Now you look in the third column to the right and you see a significance value of .728. Because this significance value is greater than .05, we do not reject the null hypothesis and we conclude that the two variables are independent of each other. Thus, there is no relationship between the two variables.

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Comment [9]: Michael, I don't know where you obtained the information in this small textbox here.